

ORDER FOR SUPPLIES OR SERVICES

PAGE OF PAGES

1

3

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

| | | | | | |
|--|------------------------------|---|--|--|---------------------------|
| 1. DATE OF ORDER 07/19/2019 | | 2. CONTRACT NO. (If any) 68HE0118D0006 | | 6. SHIP TO: a. NAME OF CONSIGNEE Region 4 | |
| 3. ORDER NO. 68HE0419F0058 | | 4. REQUISITION/REFERENCE NO. PR-R4-19-00540 | | b. STREET ADDRESS US Environmental Protection Agency Atlanta Federal Center 61 Forsyth Street, SW | |
| 5. ISSUING OFFICE (Address correspondence to) Region 4 US Environmental Protection Agency Atlanta Federal Center 61 Forsyth Street, SW Atlanta GA 30303-3104 | | c. CITY Atlanta | | d. STATE GA | e. ZIP CODE 30303-3104 |
| 7. TO: Trudy L Kearney | | f. SHIP VIA | | | |
| a. NAME OF CONTRACTOR Hydrogeologic, Inc. | | 8. TYPE OF ORDER | | | |
| b. COMPANY NAME | | <input type="checkbox"/> a. PURCHASE REFERENCE YOUR: RFO Dated April 15, 2019 Please furnish the following on the terms and conditions specified on both sides of this order and on the attached sheet, if anv. including delivery as indicated. | | <input checked="" type="checkbox"/> b. DELIVERY Except for billing instructions on the reverse, this delivery order is subject to instructions contained on this side only of this form and is issued subject to the terms and conditions of the above-numbered contract. | |
| c. STREET ADDRESS 11107 SUNSET HILLS ROAD, SUITE 400 | | d. CITY RESTON | | e. STATE VA | f. ZIP CODE 201905309 |
| 9. ACCOUNTING AND APPROPRIATION DATA See Schedule | | 10. REQUISITIONING OFFICE Region 4 | | | |
| 11. BUSINESS CLASSIFICATION (Check appropriate box(es)) | | | | | |
| <input type="checkbox"/> a. SMALL <input checked="" type="checkbox"/> b. OTHER THAN SMALL <input type="checkbox"/> c. DISADVANTAGED <input type="checkbox"/> d. WOMEN-OWNED <input type="checkbox"/> e. HUBZone <input type="checkbox"/> f. SERVICE-DISABLED VETERAN-OWNED <input type="checkbox"/> g. WOMEN-OWNED SMALL BUSINESS (WOSB) ELIGIBLE UNDER THE WOSB PROGRAM <input type="checkbox"/> h. EDWOSB | | | | | |
| 13. PLACE OF | | 14. GOVERNMENT B/L NO. | | 15. DELIVER TO F.O.B. POINT ON OR BEFORE (Date) | |
| a. INSPECTION Destination | b. ACCEPTANCE Destination | | | | |
| 16. DISCOUNT TERMS | | | | | |

17. SCHEDULE (See reverse for Rejections)

| ITEM NO. (a) | SUPPLIES OR SERVICES (b) | QUANTITY ORDERED (c) | UNIT (d) | UNIT PRICE (e) | AMOUNT (f) | QUANTITY ACCEPTED (g) |
|-----------------|--|-------------------------|-------------|-------------------|---------------|--------------------------|
| | DUNS Number: 193942604 Velsicol OU2 MDA SVE TOCOR: John Nolen Max Expire Date: 07/18/2023 Invoice Approver: Barbara D Dobson Alt Invoice App: John Nolen Continued ... | | | | | |

| | | | | | | | |
|-------------------------------------|--|--|---------------------------|----------------------|-----------------|-------------------|---------------------------|
| SEE BILLING INSTRUCTIONS ON REVERSE | 18. SHIPPING POINT | | 19. GROSS SHIPPING WEIGHT | | 20. INVOICE NO. | | 17(h) TOTAL (Cont. pages) |
| | 21. MAIL INVOICE TO: | | | | | | |
| | a. NAME RTP Finance Center | | | | | | \$2,576,526.80 |
| | b. STREET ADDRESS (or P.O. Box) US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts | | | | | | \$637,698.00 |
| c. CITY Durham | | | d. STATE NC | e. ZIP CODE 27711 | | 17(i) GRAND TOTAL | |

22. UNITED STATES OF

AMERICA BY (Signature)

07/19/2019

Geoffrey Krieger

ELECTRONIC SIGNATURE

23. NAME (Typed)

Geoffrey Krieger

TITLE: CONTRACTING/ORDERING OFFICER

ORDER FOR SUPPLIES OR SERVICES
SCHEDULE - CONTINUATION

PAGE NO
2

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

| | | |
|-----------------------------|-------------------------------|----------------------------|
| DATE OF ORDER 07/19/2019 | CONTRACT NO. 68HE0118D0006 | ORDER NO. 68HE0419F0058 |
|-----------------------------|-------------------------------|----------------------------|

| ITEM NO. (a) | SUPPLIES/SERVICES (b) | QUANTITY ORDERED (c) | UNIT (d) | UNIT PRICE (e) | AMOUNT (f) | QUANTITY ACCEPTED (g) |
|-----------------|---|----------------------------|-------------|----------------------|---------------|-----------------------------|
| | Admin Office: Region 4 US Environmental Protection Agency Atlanta Federal Center 61 Forsyth Street, SW Atlanta GA 30303-3104 Accounting Info: 19-T-4AD0R-000DD2-2505-0475RA02-C002-194ADT9 045-001 BFY: 19 Fund: T Budget Org: 4AD0R Program (PRC): 000DD2 Budget (BOC): 2505 Job #: 0475RA02 Cost: C002 DCN - Line ID: 194ADT9045-001 Period of Performance: 07/19/2019 to 07/18/2020 | | | | | |
| 0001A | Monthly Operation of SVE System | 12 | MO | 14,474.79 | 173,697.48 | |
| 0001B | Other Direct Costs, including Carbon Regeneration,Fuel, H2/N2 gas, utilities and Transportation Disposal. | | | | | |
| 0002A | Monthly Operation of SVE System (7/19/20-7/18/21) (Option Line Item) 05/19/2020 | | | | 106,223.28 | |
| 0002B | Other Direct Costs, including Carbon Regeneration,Fuel, H2/N2 gas, utilities and Transportation Disposal. ' (7/19/20-7/18/21) (Option Line Item) 05/19/2020 | | | | 500,000.00 | |
| 0003A | Monthly Operation of SVE System (7/19/21-7/18/22) (Option Line Item) 05/19/2021 | | | | 107,989.44 | |
| 0003B | Other Direct Costs, including Carbon Regeneration,Fuel, H2/N2 gas, utilities and Transportation Disposal. Continued ... | | | | 500,000.00 | |

TOTAL CARRIED FORWARD TO 1ST PAGE (ITEM 17(H))

\$1,387,910.20

ORDER FOR SUPPLIES OR SERVICES
SCHEDULE - CONTINUATION

PAGE NO
3

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| DATE OF ORDER 07/19/2019 | CONTRACT NO. 68HE0118D0006 | ORDER NO. 68HE0419F0058 |
|-----------------------------|-------------------------------|----------------------------|

| ITEM NO. (a) | SUPPLIES/SERVICES (b) | QUANTITY ORDERED (c) | UNIT (d) | UNIT PRICE (e) | AMOUNT (f) | QUANTITY ACCEPTED (g) |
|-----------------|--|----------------------------|-------------|----------------------|---------------|-----------------------------|
| | (7/19/21-7/18/22) (Option Line Item) 05/19/2021 | | | | | |
| 0004A | Monthly Operation of SVE System (7/19/22-7/18/23) (Option Line Item) 05/19/2022 | | | | 93,518.88 | |
| 0004B | Other Direct Costs, including Carbon Regeneration,Fuel, H2/N2 gas, utilities and Transportation Disposal. (7/19/22-7/18/23) (Option Line Item) 05/19/2022 | | | | 500,000.00 | |
| 0005A | Monthly Operation of SVE System (7/19/23-7/18/24) (Option Line Item) 05/19/2023 | | | | 95,097.72 | |
| 0005B | Other Direct Costs, including Carbon Regeneration,Fuel, H2/N2 gas, utilities and Transportation Disposal. (7/19/23-7/18/24) (Option Line Item) 05/19/2023 | | | | 500,000.00 | |

TOTAL CARRIED FORWARD TO 1ST PAGE (ITEM 17(H))

\$1,188,616.60

**Velsicol/Hardeman County Landfill Site
Toone, Hardeman Co. Tennessee**

1.0 INTRODUCTION

1.1 Purpose

The purpose of this Performance Work Statement (PWS) is to operate, monitor, and maintain the Middle Disposal Area (MDA) soil vapor extraction (SVE) system for Operable Unit # 2 (OU2), at the Velsicol/Hardeman County Landfill Site.

The MDA SVE operation shall be complete when the Contractor meets and gets EPA approval that the following performance standard has been met in accordance with Remedial Action Objective 4 from the September 2012 Amended Record of Decision (AROD) (Appendix A), and contractor properly performs system shutdown and mothball activities:

The performance standard for the SVE treatment systems will be to achieve a minimum 97% net reduction from baseline conditions of mean VOC soil gas concentrations in the MDA.

For MDA baseline conditions refer to the 2018 MDA Baseline Condition Technical Memorandum (see Appendix B)

The remaining performance monitoring and system operation and/or decommissioning will be done under a separate task order.

1.2 Task Order Type

This will be a Hybrid – Firm Fixed Price Task Order with optional Time and Material line items for other direct costs.

1.3 Period of Performance

The period of performance for this Task Order is as follows:

- Base (365 days from award)
- Option 1 (Base + 365 days)
- Option 2 (Option 1 + 365 days)
- Option 3 (Option 2 + 365 days)
- Option 4 (Option 3 + 365 days)
- Option 5 (Option 4 + 365 days)
- Option 6 (Option 5 + 365 days)

2.0 BACKGROUND

2.1 Site Description

The Velsicol/Hardeman County Landfill Site is located in western Tennessee near the town of Toone. Velsicol Chemical Corporation disposed of as many as 200,000 drums of pesticide manufacturing waste in unlined trenches from 1964 to 1973. Some of the contaminants found in the waste include heptachlor, dieldrin, endrin, hexachlorocyclopentadiene, carbon tetrachloride, and chloroform. The predominant volatile organic compound (VOC) released from the disposal areas are carbon tetrachloride and chloroform. The release of these contaminants has resulted in the notable presence of VOC's in the landfill waste zone, the native vadose zone soils underlying the landfills, the groundwater, the surface water, and the ambient and residential indoor air. The Site's four primary waste disposal areas collectively encompass 24 acres, which are broken down as follows:

- the North Disposal Area (NDA) – 20 acres
- the Middle Disposal Area (MDA) – 3 acres
- the Southwest Disposal Area (SWDA) – 0.5 acres, and
- the Southeast Disposal Area (SEDA) – 0.5 acres.

2.2 Selected remedy

A September 2012 Record of Decision (ROD) Amendment (see Appendix A) was issued and selected the remedy the site, including SVE systems and capping.

2.3 OU2 MDA Remedy Implementation

Capping

Per the 2012 AROD OU2 remedy, EPA completed a multi-layer Resource Conservation and Recovery Act (RCRA) geo-composite cap and cap extensions over the site's disposal areas. The OU2 cap construction was completed in May of 2016. Operations and Maintenance of the cap is being conducted by the Tennessee Department of Environment and Conservation (TDEC).

SVE system

The SVE remedial design was complete in 2015. In 2017, the EPA contractor completed the installation of the MDA SVE system.

The remediation system includes a series of nine vertical nested extraction well cluster containing a total of 18 individual extraction wells. The extraction wells are connected to the treatment system with a series of 4-inch diameter high density polyethylene (HDPE) aboveground laterals and 8-inch diameter HDPE main header with a positive slope to either condensate traps or back to the extraction wells. A centralized treatment facility includes blowers to extract vapor containing volatile organic contaminants (VOCs) from the vadose zone, condensate collection and storage, project logic controls (PLCS), and vapor phase

granular activated carbon (VGAC) adsorption beds to treat the vapor prior to discharge to the atmosphere.

The system operation monitoring is accomplished using continuous in-line and discrete monitoring and sample collection equipment and six soil gas probes.

The May 2018 Operation, maintenance, and monitoring (OMM) Plan (Appendix C) for the SVE system refers to four phases: Phase 1: SVE System Shakedown; Phase 2: Individual SVE Well Testing; Phase 3: SVE System Startup Operation; and Phase 4: Full SVE operation. Phase 1 of the of the MDA SVE system began in 2017 and were completed in February 2018. Phase 2 and 3 of the MDA SVE system were completed in March 2018. Phase 4, continuous full system operation has been conducted since April 2018.

3.0 Tasks

General Requirements

3.1 Site-Specific Plan(s) Development

Prepare, update, and/or maintain required site-specific plans. Site work shall not commence on a project until EPA has reviewed and/or approved all the site-specific submittals outlined below. The Agency may request that these plans be modified if project conditions change. These plans include, but are not limited to, the following:

| | |
|--|------------------------|
| Uniform Federal Policy Quality Assurance Project Plan (UFP-QAPP) | EPA review and approve |
| Data Management Plan (DMP) | EPA review and approve |
| Health and Safety Plan (HASP) | EPA review |
| Waste Management Plan (WMP) | EPA review and approve |

For further information on QAPP development, see the Quality Assurance Surveillance Plan (Appendix D). For a comprehensive list of site-specific plans and submittals, refer to Appendix E. Plans will be reviewed within 30 days of submittal.

3.2 Project Management, Monitoring and Reporting

The contractor shall submit monthly invoices and progress reports.

3.3 Permitting and/or Notifications

The Contractor shall obtain permits and licenses necessary to conduct the work required by this task order including, but not necessarily limited to, any necessary utility locations and access, environmental permits, discharge permits, and Department of Transportation (DOT) permits for transport of hazardous waste on public highways.

EPA established a national system for tracking hazardous waste shipments electronically. This system is known as e-Manifest. The Contractor shall adhere to all e-Manifest program requirements.

3.4 Post-Award Site visit

The Contractor shall conduct a post-award Site visit with the Task Order Contracting Officer's Representative (TOCOR) and on-site contractor. Assume half day meeting with project manager, system operator(s) and or engineer, and health and safety officer.

3.5 Task Order Closeout

The contractor shall close out the task orders. Activities include but are not limited to, completing all deliverables, submitting final invoice, and returning documents to EPA or other document repositories.

4.0 Operate, Maintain, and Monitor SVE system

The contractor shall provide all labor, materials, and subcontracts necessary to ensure system runs continuously and meets vapor discharge performance criteria. System operation, maintenance, and monitoring will be conducted until contractor meets system performance standards and verifies compliance in accordance with the performance criteria specified in the 2012 AROD. The performance standard for the SVE treatment systems will be to achieve a minimum 97% net reduction from baseline conditions of mean VOC soil gas concentrations for the MDA. System baseline was established in 2018. See 2018 MDA Baseline Condition Technical Memo (Appendix B).

4.1 System Transition

Upon approval of site plans, contractor shall ensure key operations staff receive system training from incumbent contractor to allow for timely transition of system. Contractor can assume the transition will include on-site operator training with incumbent contractor and will be completed within 45 days of EPA approval of site plans.

4.2 Routine Operation and Maintenance

The contractor shall provide qualified staff, materials, parts, and equipment necessary to routinely operate and maintain the system. System operation allows for a combination of remote and on-site operation and maintenance of the system. Refer to Appendix C for details on the system remote control system and standard operating procedures specific to start up, operation, and shut down. Specific to materials (e.g., carbon), as mass removal continues, the frequency of carbon vessel changeout may decrease.

4.3 Non-routine or Emergency System Maintenance

The contractor shall provide all labor, materials, and subcontractors necessary to conduct emergency and non-routine system maintenance, as needed. Contractor shall respond to and address system alarms within 1 business day (not including weekends and holidays).

4.4 Sampling, Monitoring and Reporting

Contractor shall provide necessary equipment, materials, and subcontracts to perform all SVE system and soil gas sampling, monitoring and reporting.

4.5 Data Collection

Samples shall be collected from the in-line process air sample locations on a routine basis to allow for: comparison and calibration of the onsite HFID (Flame Ionization Detector); calculation of VOC mass removal. Process air samples shall be collected in 1-liter Summa canisters.

Samples shall be collected for the soil gas probes monitoring well network at a frequency appropriate to assess system performance (refer to Appendix C (2018 Remediation System Startup, Operation, Maintenance, and Monitoring Manual – OM&M Manual) for current sampling frequency and soil probe locations).

The contractor shall capture sample information electronically that permits the creation of a Scribe-compatible¹ chain-of-custody per the 2010 EPA Region 4 Policy and Guidance.² The contractor shall capture sampling, observational, and monitoring field data and provide this data to EPA.

4.5.1 Analytical Support and Data Validation

Throughout the project planning and implementation, the contractor shall work with the TOCOR on selection of analytical services. The contractor shall request and perform analytical services in compliance with EPA requirements. Options for obtaining analytical services are:

Tier 4 - Analytical Services IAGs and Field Contracts/Subcontracts

For Analytical Services that are not under direct oversight by EPA (Tier 4), the contractor shall provide evidence that the laboratory has experience with and is fully capable of performing the required analytical method³.

All electronic data deliverables are to be received from the contractor laboratory or sub-contracted laboratory in the EPA Region 4, Scribe compatible, Electronic Data Deliverable

¹ For more information on Scribe, please refer to https://www.epaosce.org/site/site_profile.aspx?site_id=ScribeGIS or [EDGE for Scribe software, please refer to https://earthsoft.com/products/edp/edp-format-for-epar4/](https://earthsoft.com/products/edp/edp-format-for-epar4/).

² For more information on the EPA Region 4 Policy, please refer to <https://www.epa.gov/superfund/region-4-superfund-electronic-data-submission>.

³ This may include state or other Federal certifications for the specific analytical method requested. Certifications or experience with similar methods may not be considered sufficient evidence of capability. The laboratory's capability to perform the requested method shall be documented in the UFP-QAPP.

(EPAR4) format⁴. The contractor is responsible for ensuring the laboratory can generate a compliant EPAR4 file.

All spatially referenced data must be delivered in an EPA Region 4 standard ESRI spatial file format⁵, with the file geodatabase currently preferred. All GIS files⁶ submitted must have spatial reference information that describes the projection, datum, and where applicable, the collection methods.

4.5.2 Data Validation

Data Validation activities include evaluating and qualifying laboratory analytical data against predefined requirements outlined in the UFP-QAPP. The contractor shall perform data validation activities on data generated from the sub-contract laboratory performing the sample analysis.

The contractor shall provide a data validation of data packages and electronic deliverables using the following documents and requirements listed below:

- EPA's *Guidance on Environmental Data Verification and Data Validation*, EPA QA/G-8
- <https://www.epa.gov/quality/managing-quality-environmental-data-epa-region-4>
- EPA's *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*, EPA-540-R-08-005, January 2009 (OSWER Directive 9200.1-85);
- Regional sampling/project plans;
- Regional Performance Evaluation (PE) program guidance.

4.6 Operation, Maintenance, and Monitoring Reports

4.6.1 Quarterly Monitoring Report

Monitoring reports will be submitted quarterly and will provide an update and summary of all activities conducted during the reporting period. Reports will include, at a minimum:

- Summary of activities and system operation details (including, but not limited to site visits completed; wells operated; routine and nonroutine maintenance performed; changes to system operations; and other system-related actions taken);
- Identification of operational problems, the length of any shutdowns, and a summary of actions taken to rectify or prevent these problems;
- Description of samples collected and tabulated summary of results;
- Tables and/or graphs documenting key operational parameters monitored by the system programmable logic control (PLC) system (including, but not limited to flow rates,

⁴ For more information on the [EPAR4](https://www.epa.gov/quality/managing-quality-environmental-data-epa-region-4) Electronic Data Deliverable Format, refer to <https://www.epa.gov/superfund/region-4-superfund-electronic-data-submission>.

⁵ All geospatial data must be submitted as un-projected geographic coordinates in decimal degree format using North American Datum 1983 (NAD83) or World Geodetic System 1984 (WGS84) as the datum. These coordinate requirements are specified in the EPA National Geospatial Data Policy, 2008.

⁶ All GIS files must have associated Federal Geographic Data Committee (FGDC) compliant metadata. The Content Standard for Digital Geospatial Metadata can be found at <http://www.fgdc.gov>. An add-on editor for ESRI software, EPA Metadata Editor (EME), complies with the FGDC metadata requirement.

pressures, temperatures, lower explosive limit (LEL), carbon monoxide (CO) concentrations, relative humidity levels, and influent/effluent total VOC concentrations);

- Tables and/or graphs showing calculated values and trends for key system performance parameters (including but not limited to volume of soil vapor extracted, mass VOC removal, mass VOC emissions, and pore volumes vented);
- Management of wastes (condensate and vapor-phase granular activated carbon).

4.6.2 Monthly update

In addition, the contractor will provide informal monthly updates of status of SVE operation via email or conference call.

4.6.3 System Performance Standard Verification Memorandum

Upon achieving the system operation performance standards, the contractor shall submit a memorandum demonstrating compliance with the performance standards. Demonstrate shutdown conditions per results of the well field sampling (in accordance with the QAPP) to demonstrate performance standards have been met. Memorandum will be submitted to EPA for review and approval.

4.7 Waste Management

The primary waste products generated during operation of the MDA SVE system are spent carbon from the carbon absorption vessels and condensate from the vapor liquid separator and moisture trap.

The contractor shall procure the necessary subcontractor to removal and dispose of spent carbon at a frequency determined by system carbon usage. The contractor shall dispose of vapor liquid separator and moisture trap wastes at a frequency determined by the contractor in accordance with transportation and disposal regulations.

4.8 Site Maintenance and Site Security/Guard Services

The contractor shall ensure that all utilities are maintained and kept in service. Utilities present at the MDA include natural gas, electric, water, and solid waste. Information on these utilities will be provided following contract award.

Site maintenance activities include mowing of the MDA and SVE enclosure areas to ensure grass does not obstruct system and monitoring equipment. Special care is required in the areas with piping, wells, and other SVE related equipment and it is anticipated that mowing will occur approximately twice a year.

4.9 System and Monitoring Plan Optimization

As appropriate, the Contractor shall consider means for optimizing system operation and mass recovery. Potential optimization opportunities may include varying operational scenarios (i.e., different well configurations (i.e. adding additional SVE contingency extraction wells), utilizing

wells with lower concentrations to provide dilutions); direct discharge of extracted soil vapors; and/or discharge through a single VGAC vessel.

The Contractor shall propose recommended system modifications to EPA in a technical memorandum for review and approval.

5.0 System Design and Construction Modifications (Optional)

The contractor shall implement all necessary actions to update the system operation in accordance with the work plan, including design, construction, and updates to the OMM plan.

5.1 Design Support

The contractor shall provide engineering services to support remedy operation optimization activities. Engineering support may include:

- Computer Aided Design (CAD) generated drawings; and
- Record drawings, modifications or as-built drawings

5.2 Construction Support Services

The contractor may be required to provide minimal construction support services necessary to implement remedy system optimization activities. The contractor shall implement the activities through construction services, technical and field engineering services, and, if necessary, procurement and management of subcontracted services. Construction activities may require contractor to install system infrastructure through the existing cap which may require updates to site plans to meet health and safety and waste management requirements.

5.3 System Shutdown and Closeout (Optional)

Contractor shall submit a shutdown workplan for EPA review and approval. System shutdown activities will require the contractor to shut down and secure the system and all components in accordance with the manufacturer's recommendations for potential re-use.

After EPA approves both the shutdown workplan and the System Performance Standard Verification Memorandum, the contractor shall complete shutdown activities.

5.4 Update the Conceptual Site Model

Upon request and based on information collected under this task, EPA may request the contractor to update the existing conceptual site model (CSM). The CSM is intended to be an iterative, "living representation" of a site that summarizes and helps project teams visualize and understand available information.